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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON DATA SCIENCE AND MACHINE LEARNING

A continuous limit theory for modeling stochastic ADMM variants

By

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Abstract

Recently, there has been a great deal of research attention on understanding the convergence behavior of first-order methods using tools from continuous dynamical systems. The alternating direction method of multipliers (ADMM) is a widely used first-order method for solving optimization problems arising from machine learning and statistics, and the stochastic versions of ADMM plays a key role in many modern large-scale machine learning problems. We introduce a unified algorithmic framework called generalized stochastic ADMM and investigate it via a continuous-time analylsis. We rigorously proved that under some proper scaling, the trajectory of stochastic ADMM weakly converges to the trajectory of the stochastic differential equation with small noise parameters. Our analysis also provides a theoretical explanation on why the relaxation parameter should be chosen between 0 and 2.

Biography: *Dr. Huizhuo YUAN received her B.S. degree in mathematics from Peking University in 2013 and her Ph.D. degree in Statistics from Peking University in 2019, working on optimization and machine learning in the Center for Data Science. Her current research interests lie broadly in stochastic optimization, particularly from a continuous dynamical system understanding such as modeling stochastic ADMM using continuous-time model, variance reduction in stochastic compositional optimization problems, as well as theory and applications in reinforcement learning, such as reducing the sample complexity of policy gradient-based algorithms via variance reduction techniques.*

Date : 30 June 2020 (Tuesday)
Time : 11:00am – 12:00noon
Zoom Meeting : https://hkust.zoom.us/j/5616960008

All are Welcome!